

Title (en)

CONTINUOUS LEAD STRIP CASTER AND NOZZLE

Title (de)

KONTINUIERLICHE BLEISTREIFENGIESSANLAGE UND DÜSE

Title (fr)

APPAREIL DE COULÉE CONTINUE DE TOLE DE PLOMB ET BUSETTE

Publication

EP 3296038 A1 20180321 (EN)

Application

EP 17191213 A 20170914

Priority

- US 201662394561 P 20160914
- US 201715703330 A 20170913

Abstract (en)

In one embodiment, a lead strip caster for battery grids includes a ladle, a nozzle, and a pair of rollers. The lead strip caster produces a continuous lead strip for use as battery positive plate grids. The ladle has an inlet to receive molten lead and has an outlet. The nozzle has at least one passage that communicates with the outlet of the ladle in order to receive molten lead from the ladle. The first roller is situated at a first exterior side of the nozzle. The first roller rotates via a first driver. The second roller is situated at a second exterior side of the nozzle. The second roller rotates via a second driver.

IPC 8 full level

B22D 11/06 (2006.01); **B22D 25/04** (2006.01); **H01M 4/14** (2006.01); **H01M 4/16** (2006.01)

CPC (source: EP US)

B22D 11/004 (2013.01 - EP US); **B22D 11/0622** (2013.01 - EP US); **B22D 11/0642** (2013.01 - EP US); **B22D 11/0682** (2013.01 - EP US); **H01M 4/16** (2013.01 - EP US); **H01M 4/22** (2013.01 - EP US); **H01M 4/73** (2013.01 - EP US); **H01M 10/12** (2013.01 - EP US); **Y02E 60/10** (2013.01 - EP); **Y02P 70/50** (2015.11 - EP); **Y02T 10/70** (2013.01 - US)

Citation (search report)

- [A] US 4050502 A 19770927 - ALLYN JEROME B, et al
- [A] US 5467805 A 19951121 - FARINA PIETRO [IT]
- [A] DE 10302382 A1 20040902 - MITTERMAIER FRANZ XAVER [DE]

Citation (third parties)

Third party : c/o Gallo & Partners /Luca Gallo/

- JP S5576571 A 19800609 - FURUKAWA ELECTRIC CO LTD, et al
- US 4153101 A 19790508 - CHATEAU JEAN-MARIE, et al
- CN 101786145 A 20100728 - KUNMING DATZE MINING AND METAL
- WO 9709139 A1 19970313 - FATA HUNTER INC [US]
- US 6220336 B1 20010424 - SMITH DENNIS M [US]
- EP 1539404 A1 20050615 - COMMW SCIENT IND RES ORG [AU]
- US 5584336 A 19961217 - ROMANOWSKI CHRISTOPHER A [US], et al
- US 6363999 B1 20020402 - SMITH DENNIS M [US]
- WO 2014056796 A1 20140417 - BRUNO PRESEZZI S P A [IT]
- EP 0983129 A1 20000308 - PECHINEY RECHERCHE [FR]
- EP 1056560 A1 20001206 - PECHINEY RHENALU [FR]
- EP 1555074 A1 20050720 - KM EUROPA METAL AG [DE]
- EP 1867412 A1 20071219 - SUMITOMO ELECTRIC INDUSTRIES [JP]
- KR 20120074540 A 20120706 - POSCO [KR], et al
- US 3765817 A 19731016 - ANCKER F
- JP 2011189356 A 20110929 - TOYOTA CENTRAL RES & DEV, et al
- XINLIANG YANG: "Particle Dispersion in Aluminium and Magnesium Alloys", THESIS, July 2016 (2016-07-01), pages I-VIII, 1 - 137, XP055616026
- HISAKI WATARI ET AL.: "Twin roll casting of magnesium alloys with high aluminum contents", JOURNAL OF ACHIEVEMENTS IN MATERIALS AND MANUFACTURING ENGINEERING, vol. 18, no. 1-2, September 2006 (2006-09-01), pages 419 - 422, XP055616034
- CH. GRAS ET AL.: "Microdefects formation during the twin-roll casting of Al-Mg-Mn aluminium alloys", JOURNAL OF MATERIALS PROCESSING TECHNOLOGY, vol. 167, 2005, pages 62 - 72, XP025324533
- YUN-SOO LEE ET AL.: "Effect of casting parameters on roll separation force during twin roll casting", 11TH INTERNATIONAL CONFERENCE ON TECHNOLOGY OF PLASTICITY, vol. 81, 2014, pages 1547 - 1552, XP029078388
- HIDE TO HARADA ET AL.: "Fabrication of High Aluminum Content Mg alloys using a Horizontal Twin Roll Caster", WORLD ACADEMY OF SCIENCE, ENGINEERING AND TECHNOLOGY, vol. 63, 2012, XP055616045
- E. KRSTIC VUKELJA ET AL.: "Continuous roll casting of Aluminium alloys - Casting parameters analysis", METALURGIJA, vol. 49, no. 2, 2010, pages 115 - 118, XP055616050
- PIERRE-YVES MENET ET AL.: "Strip casting technology... a key to product quality", INTERNATIONAL MELT QUALITY WORKSHOP, October 2001 (2001-10-01), XP055616053
- YUCEL BIROL: "Survey of inclusions in twin roll casting of wrought aluminium alloys", INTERNATIONAL JOURNAL OF CAST METALS RESEARCH, vol. 23, no. 4, 2010, pages 250 - 255, XP055616056

Cited by

EP3829789A4

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3296038 A1 20180321; EP 3296038 B1 20210303; DK 3296038 T3 20210531; ES 2870952 T3 20211028; HU E054331 T2 20210830; PL 3296038 T3 20210802; PT 3296038 T 20210322; RS 61737 B1 20210531; SI 3296038 T1 20210730; US 10960461 B2 20210330; US 2018071816 A1 20180315

DOCDB simple family (application)

EP 17191213 A 20170914; DK 17191213 T 20170914; ES 17191213 T 20170914; HU E17191213 A 20170914; PL 17191213 T 20170914; PT 17191213 T 20170914; RS P20210448 A 20170914; SI 201730720 T 20170914; US 201715703330 A 20170913